

#BiblioVerifica Open Science Olympics 2020

in memory of Jon Tennant (1988-2020)

BiblioVerifica dedicates the Olympics 2020 to the memory of Jon Tennant, who died prematurely on April 9th, through 15 self-assessment quizzes on open science practices and principles. Every citizen can experience his or her own knowledge of the topics related to the “OpenScienceMOOC” modules designed and implemented by Jon Tennant:

- OPEN PRINCIPLES
- OPEN COLLABORATION
- REPRODUCIBLE RESEARCH AND DATA ANALYSIS
- OPEN RESEARCH DATA
- OPEN RESEARCH SOFTWARE AND OPEN SOURCE
- OPEN ACCESS TO RESEARCH PAPERS
- OPEN EVALUATION
- PUBLIC ENGAGEMENT WITH SCIENCE
- OPEN EDUCATIONAL RESOURCES
- OPEN ADVOCACY

Start date August 15th – end date September 20th

Open Science Olympics



<http://bit.ly/bvolympics>

- WE DO NOT ASK FOR MONEY
- WE DO NOT DISCLOSE PERSONAL OR CONTACT DETAILS TO THIRD PARTIES
- WE DO NOT OFFER CASH PRIZES OR VOUCHERS

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OPEN PRINCIPLES, mooc module

“Open Science Manifesto”

Principle 1:

Enables a knowledge commons where every individual has the means to decide how their knowledge is governed and managed to address their needs

OPEN PRINCIPLES, mooc module

“Open Science Manifesto”

Principle 2:

It recognizes cognitive justice , the need for diverse understandings of knowledge making to co-exist in scientific production

OPEN PRINCIPLES, mooc module

“Open Science Manifesto”

Principle 3:

It practices situated openness by addressing the ways in which context, power and inequality condition scientific research

OPEN PRINCIPLES, mooc module

“Open Science Manifesto”

Principle 4:

It advocates for every individual's right to research and enables different forms of participation at all stages of the research process.

OPEN PRINCIPLES, mooc module

“Open Science Manifesto”

Principle 5:

It fosters equitable collaboration between scientists and social actors and cultivates co-creation and social innovation in society

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OPEN PRINCIPLES, mooc module

“Open Science Manifesto”

Principle 6:

It incentivizes inclusive infrastructures that empower people of all abilities to make, and use accessible open-source technologies.

OPEN PRINCIPLES, mooc module

“Open Science Manifesto”

Principle 7:

strives to use knowledge as a pathway to sustainable development, equipping every individual to improve the well-being of our society and planet

OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 1:

Clarify Why You Might Want to Start an International Research Collaboration

OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 2:

Consider the Characteristics Your International Collaborator Must Have

OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 3:

Consider Practical Approaches to Establishing the Relationship

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OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 4:

Define the Type of Collaboration You Want to Pursue

OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 5:

Clearly Define the Main Goals and Expected Outcomes

OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 6:

Be Aware of the Most Important Obstacles to Establishing the Relationship

OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 7:

Discuss Dissemination Policies as well as Intellectual Property Rights at an Early Stage

OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 8:

Consider and Clarify the Extent to Which You Are Prepared to Share Resources

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“Ten Simple Rules for Establishing International Research Collaborations”

Rule 9:

Avoid Conflicts of Interest

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OPEN COLLABORATION, mooc module

“Ten Simple Rules for Establishing International Research Collaborations”

Rule 10:

Be Aware of Potential Funding Opportunities

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 1:

For Every Result, Keep Track of How It Was Produced

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 2:

Avoid Manual Data Manipulation Steps

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 3:

Archive the Exact Versions of All External Programs Used

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 4:

Version Control All Custom Scripts

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 5:

Record All Intermediate Results, When Possible in Standardized Formats

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REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 6:

For Analyses That Include Randomness, Note Underlying Random Seeds

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“Ten Simple Rules for Reproducible Computational Research”

Rule 7:

Always Store Raw Data behind Plots

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 8:

Generate Hierarchical Analysis Output, Allowing Layers of Increasing Detail to Be Inspected

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 9:

Connect Textual Statements to Underlying Results

REPRODUCIBLE RESEARCH AND DATA ANALYSIS, mooc module

“Ten Simple Rules for Reproducible Computational Research”

Rule 10:

Provide Public Access to Scripts, Runs, and Results

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 1.1:

The same Data Object should be re-findable at any point in time, thus Data Objects should be persistent, with emphasis on their metadata

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OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 1.2:

A Data Object should minimally contain basic machine actionable metadata that allows it to be distinguished from other Data Objects

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 1.3:

Identifiers for any concept used in Data Objects should therefore be Unique and Persistent

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 2.1:

Upon appropriate authorization

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 2.2:

Through a well-defined protocol

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 2.3:

Thus, machines and humans alike will be able to judge the actual accessibility of each Data Object.

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OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 3.1:

(Meta) data is machine-actionable

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 3.2:

(Meta) data formats utilize shared vocabularies and/or ontologies

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 3.3:

(Meta) data within the Data Object should thus be both syntactically parseable and semantically machine-accessible

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 4.1:

Data Objects should be compliant with FAIR principles 1-3

OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 4.2:

(Meta) data should be sufficiently well-described and rich that it can be automatically (or with minimal human effort) linked or integrated, like-with-like, with other data sources

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OPEN RESEARCH DATA, mooc module

“FAIR Guiding Principles for scientific data management and stewardship”

Principle 4.3:

Published Data Objects should refer to their sources with rich enough metadata and provenance to enable proper citation

OPEN RESEARCH SOFTWARE AND OPEN SOURCE, mooc module

“Science Code Manifesto”

Code:

All source code written specifically to process data for a published paper must be available to the reviewers and readers of the paper

OPEN RESEARCH SOFTWARE AND OPEN SOURCE, mooc module

“Science Code Manifesto”

Copyright:

The copyright ownership and license of any released source code must be clearly stated

OPEN RESEARCH SOFTWARE AND OPEN SOURCE, mooc module

“Science Code Manifesto”

Citation:

Researchers who use or adapt science source code in their research must credit the code's creators in resulting publications

OPEN RESEARCH SOFTWARE AND OPEN SOURCE, mooc module

“Science Code Manifesto”

Credit:

Software contributions must be included in systems of scientific assessment, credit, and recognition

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OPEN RESEARCH SOFTWARE AND OPEN SOURCE, mooc module

“Science Code Manifesto”

Curation:

Source code must remain available, linked to related materials, for the useful lifetime of the publication

OPEN ACCESS TO RESEARCH PAPERS, mooc module

“Budapest Open Access Initiative”

Strategy 1. Self-Archiving:

Scholars need the tools and assistance to deposit their refereed journal articles in open electronic archives, a practice commonly called, self-archiving.

OPEN ACCESS TO RESEARCH PAPERS, mooc module

“Budapest Open Access Initiative”

Strategy 2. Open-access Journals:

Scholars need the means to launch a new generation of journals committed to open access, and to help existing journals that elect to make the transition to open access.

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 1:

Do not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions

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OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 2:

Be explicit about the criteria used in evaluating the scientific productivity of grant applicants and clearly highlight, especially for early-stage investigators, that the scientific content of a paper is much more important than publication metrics or the identity of the journal in which it was published

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 3:

For the purposes of research assessment, consider the value and impact of all research outputs (including datasets and software) in addition to research publications, and consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 4:

Be explicit about the criteria used to reach hiring, tenure, and promotion decisions, clearly highlighting, especially for early-stage investigators, that the scientific content of a paper is much more important than publication metrics or the identity of the journal in which it was published

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OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 5:

For the purposes of research assessment, consider the value and impact of all research outputs (including datasets and software) in addition to research publications, and consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 6:

Greatly reduce emphasis on the journal impact factor as a promotional tool, ideally by ceasing to promote the impact factor or by presenting the metric in the context of a variety of journal-based metrics that provide a richer view of journal performance

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 7:

Make available a range of article-level metrics to encourage a shift toward assessment based on the scientific content of an article rather than publication metrics of the journal in which it was published

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 8:

Encourage responsible authorship practices and the provision of information about the specific contributions of each author

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OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 9:

Whether a journal is open-access or subscription-based, remove all reuse limitations on reference lists in research articles and make them available under the Creative Commons Public Domain Dedication

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 10:

Remove or reduce the constraints on the number of references in research articles, and, where appropriate, mandate the citation of primary literature in favor of reviews in order to give credit to the group(s) who first reported a finding

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 11:

Be open and transparent by providing data and methods used to calculate all metrics

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 12:

Provide the data under a licence that allows unrestricted reuse, and provide computational access to data, where possible

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OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 13:

Be clear that inappropriate manipulation of metrics will not be tolerated; be explicit about what constitutes inappropriate manipulation and what measures will be taken to combat this

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 14:

Account for the variation in article types (e.g., reviews versus research articles), and in different subject areas when metrics are used, aggregated, or compared

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 15:

When involved in committees making decisions about funding, hiring, tenure, or promotion, make assessments based on scientific content rather than publication metrics

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 16:

Wherever appropriate, cite primary literature in which observations are first reported rather than reviews in order to give credit where credit is due

OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 17:

Use a range of article metrics and indicators on personal/supporting statements, as evidence of the impact of individual published articles and other research outputs

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OPEN EVALUATION, mooc module

“San Francisco Declaration on Research Assessment”

Practice 18:

Challenge research assessment practices that rely inappropriately on Journal Impact Factors and promote and teach best practice that focuses on the value and influence of specific research outputs

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 1:

Citizen science projects actively involve citizens in scientific endeavour that generates new knowledge or understanding. Citizens may act as contributors, collaborators, or as project leader and have a meaningful role in the project.

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 2:

Citizen science projects have a genuine science outcome. For example, answering a research question, informing conservation action, or facilitating policy decisions.

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 3:

Citizen science provides benefits to both science and society. Benefits may include learning opportunities, personal enjoyment, social benefits, the publication of research outputs, contributing to scientific evidence that can influence policy on many scales (locally, nationally, and internationally), and connecting the wider community with science.

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PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 4:

Citizen scientists may participate in various stages of the scientific process. This may include developing research questions, designing methods, gathering and analysing data, and communicating results.

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 5:

Citizen scientists receive feedback from the project. For example, how their data are being used and the research, policy or societal outcomes.

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 6:

Citizen science, as with all forms of scientific inquiry, has limitations and biases that should be considered and controlled for. However, unlike traditional research approaches, citizen science provides greater opportunity for public engagement and participation, increasing accessibility of science in society.

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 7:

Where possible and suitable, project data and meta-data from citizen science projects are made publicly available and results are published in an open access format. Data sharing may occur during or after the project, unless there are security or privacy concerns that prevent this from occurring.

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PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 8:

Citizen scientists are suitably acknowledged by projects. This may include acknowledgement in project communications, result reporting and publications.

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 9:

Citizen science programs offer a range of benefits and outcomes which should be acknowledged and considered in project evaluation. Communication and evaluation of projects could include scientific outputs, data quality, participant experience and learning, knowledge sharing, social benefits, capacity building, new ways of science engagement, enhanced stakeholder dialogue, and wider societal or policy impact.

PUBLIC ENGAGEMENT WITH SCIENCE, mooc module

“Ten Principles of Citizen Science”

Principle 10:

The leaders of citizen science projects take into consideration legal and ethical considerations of the project. These considerations include copyright, intellectual property, data sharing agreements, confidentiality, attribution, participant safety and wellbeing, traditional owner consultation, and the environmental impact of any activities.

OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 1:

Foster awareness and use of OER. Promote and use OER to widen access to education at all levels, both formal and non-formal, in a perspective of lifelong learning, thus contributing to social inclusion, gender equity and special needs education. Improve both cost-efficiency and quality of teaching and learning outcomes through greater use of OER.

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OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 2:

Facilitate enabling environments for use of Information and Communications Technologies (ICT). Bridge the digital divide by developing adequate infrastructure, in particular, affordable broadband connectivity, widespread mobile technology and reliable electrical power supply. Improve media and information literacy and encourage the development and use of OER in open standard digital formats.

OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 3:

Reinforce the development of strategies and policies on OER. Promote the development of specific policies for the production and use of OER within wider strategies for advancing education.

OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 4:

Promote the understanding and use of open licensing frameworks. Facilitate the re-use, revision, remixing and redistribution of educational materials across the world through open licensing, which refers to a range of frameworks that allow different kinds of uses, while respecting the rights of any copyright holder.

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OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 5:

Support capacity building for the sustainable development of quality learning materials. Support institutions, train and motivate teachers and other personnel to produce and share high-quality, accessible educational resources, taking into account local needs and the full diversity of learners. Promote quality assurance and peer review of OER. Encourage the development of mechanisms for the assessment and certification of learning outcomes achieved through OER.

OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 6:

Foster strategic alliances for OER. Take advantage of evolving technology to create opportunities for sharing materials which have been released under an open license in diverse media and ensure sustainability through new strategic partnerships within and among the education, industry, library, media and telecommunications sectors.

OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 7:

Encourage the development and adaptation of OER in a variety of languages and cultural contexts. Favour the production and use of OER in local languages and diverse cultural contexts to ensure their relevance and accessibility. Intergovernmental organisations should encourage the sharing of OER across languages and cultures, respecting indigenous knowledge and rights.

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OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 8:

Encourage research on OER. Foster research on the development, use, evaluation and re-contextualisation of OER as well as on the opportunities and challenges they present, and their impact on the quality and cost-efficiency of teaching and learning in order to strengthen the evidence base for public investment in OER.

OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 9:

Facilitate finding, retrieving and sharing of OER. Encourage the development of user-friendly tools to locate and retrieve OER that are specific and relevant to particular needs. Adopt appropriate open standards to ensure interoperability and to facilitate the use of OER in diverse media.

OPEN EDUCATIONAL RESOURCES, mooc module

“Paris OER Declaration 2012”

Recommendation 10:

Encourage the open licensing of educational materials produced with public funds. Governments/competent authorities can create substantial benefits for their citizens by ensuring that educational materials developed with public funds be made available under open licenses (with any restrictions they deem necessary) in order to maximize the impact of the investment.

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OPEN ADVOCACY, mooc module

“Pragmatic steps for inclusivity in modern scholarly research”

Step 1:

Make the choice to have inclusivity centered in projects right from the beginning. It cannot be an afterthought; e.g., actively include scientists from non-WEIRD (western, educated, industrialized, rich and democratic) countries as co-leaders.

OPEN ADVOCACY, mooc module

“Pragmatic steps for inclusivity in modern scholarly research”

Step 2:

Actively engage leaders in non-WEIRD communities to help you with contacts. Social media networks are extremely helpful here.

OPEN ADVOCACY, mooc module

“Pragmatic steps for inclusivity in modern scholarly research”

Step 3:

Determine what the different dimensions of representation look like, including geographic, linguistic, psychographic, gender, class, and non-dominance in dominant cultures at both local and global levels, e.g., Latinx in the USA, African vis-a-vis the Global North.

OPEN ADVOCACY, mooc module

“Pragmatic steps for inclusivity in modern scholarly research”

Step 4:

Determine what groups to include logistically: the world is massively diverse and complex. We cannot pragmatically include everyone. Hence, what does good/even/fair representation look like realistically in the context of the research? Determine this collaboratively with non-WEIRD researchers.

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OPEN ADVOCACY, mooc module

“Pragmatic steps for inclusivity in modern scholarly research”

Step 5:

Access to research will always be linguistically dependent. Although English is the current lingua franca of science, we must still accommodate different languages however possible; e.g., by including abstracts in non-dominant languages, as many non-lingua franca journals already do for English.

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